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September 9, 2013

**VIA ELECTRONIC FILING**

Ms. Marlene Dortch  
Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington DC 20554

**Re:** August 12, 2013 Letter by CalNENA; and

**NOTICE OF EX-PARTE COMMUNICATION -- *In the Matter of Wireless E911 Location Accuracy Requirements***, PS Docket No. 07-114.

Dear Ms. Dortch:

On September 6, 2013, Joe Marx, Michael Goggin, and I (all of AT&T), met with David Turetsky, David Furth, Tim May, Nicole McGinnis, and Dana Zelman of the Commission's Public Safety and Homeland Security Bureau ("PSHSB"). Also attending the meeting via conference bridge were Erika Olsen of the PSHSB and Henning Schulzrinne of the Office of Strategic Planning and Policy Analysis. The purpose of the meeting was to discuss AT&T's perspective on the August 12<sup>th</sup> letter filed by the California Chapter of the National Emergency Number Association ("CalNENA").<sup>1</sup> This letter purported to raise issues of E-911 location accuracy as well as indoor location accuracy standards. The attached slide deck<sup>2</sup> was distributed during the meeting and used to help guide the discussion with the Commission staff.

During the meeting, AT&T reassured the Commission staffers present that, notwithstanding the claims made in CalNENA's letter, there was no public safety crisis in California. We explained how CalNENA's concerns about delayed 911 location data related to AT&T's deployment of Assisted Global Positioning Systems (AGPS) technologies to improve location accuracy. And, after providing a high-level overview of a typical 911 call flow, we also explained how AT&T's network conforms with the established technical standards regarding the location delivery. We also demonstrated, via data collected in our network, how we provide E911 Phase II information in a very high percentage of calls, but the PSAPs in the CalNENA study only request phase II information roughly 15% of the time. In summary<sup>3</sup>, our research indicates that the failure of the PSAPs noted in the CalNENA report to receive Phase II location information was not a failure of AT&T to deliver such information, but a failure of those PSAPs to request it.

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<sup>1</sup> Available at: <http://apps.fcc.gov/ecfs/document/view?id=7520937335>.

<sup>2</sup> Please see "Attachment A: Slides used during September 6, 2013 Meeting"

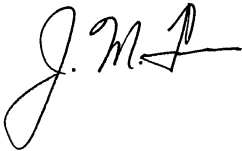
<sup>3</sup> Also note, AT&T's formal response to the August 12<sup>th</sup> letter from CalNENA was sent to FCC Chairwoman Clyburn on September 6, 2013, and is also attached to this letter as "Attachment B."

Briefly, we also discussed the ongoing work by the FCC's Communications Security, Reliability and Interoperability Council (CSRIC) on emerging technologies for indoor wireless E-911 location accuracy. We stated that the CSRIC was likely the best forum to explore long term opportunities for improving location accuracy.

In accordance with the Commission's rules, this letter and the attached presentation are being filed in the above-referenced dockets via the FCC's Electronic Comments Filing System.

Should you have any questions regarding the above or the attached, please feel free to contact me directly.

Sincerely,

A handwritten signature in black ink, appearing to be "J. M. A." with a stylized flourish at the end.

Attachments

Cc (via electronic mail):

Mr. David Turetsky - PSHSB

Mr. David Furth - PSHSB

Mr. Timothy May - PSHSB

Ms. Nicole McGinnis - PSHSB

Ms. Dana Zelman - PSHSB

Ms. Erika Olsen - PSHSB

Mr. Henning Schulzrinne – Office of Strategic Planning and Policy Analysis

**Attachment A: Slides used during  
September 6, 2013 Meeting**

*Rethink Possible*



# **FCC Update: CalNENA E911 Phase II Location Display Issue**

**September 6, 2013**



# E911 Compliance

- AT&T's network is operating correctly
- AT&T's E911 location accuracy fully complies with FCC rules
- AT&T's network is making this location information available to PSAPs
- AT&T is continuing further study and investigation to determine why PSAPs claim they do not receive this information (which is clearly available in AT&T's network)



# Background

- On August 12, 2013 – CalNENA sent a letter to the FCC reporting that E911 locates dating from 2008-2012 that claims to have been in decline during this period
- CalNENA did not contact the wireless industry during this period prior to sending the letter to the FCC
- On August 15, immediately learning of the letter, AT&T held a preliminary discussion with CalNENA to understand their concerns and data
- CalNENA's data and graphs purportedly raise concerns about "location yield" (i.e., quantity of E911 locates), not location accuracy
- On August 20, AT&T and other wireless carriers met face to face with CalNENA representatives to discuss the issue
- AT&T is committed to Public Safety and will continue to investigate these issues
  - Future meetings planned with CalNENA and CPE Vendors



# AT&T Investigation to date

- Using the counties identified in the CalNENA data, our initial analysis focused on two metrics critical to the functioning of the wireless '911' network:
  - E911 Location Yield (live '911' calls)
  - E911 Location Accuracy (drive testing)
- Per our data, both metrics indicate that AT&T E911 Network is functioning correctly
- We also analyzed the process for introducing new cells in the network—a process that requires verification of delivery of Phase II information for all calls to the PSAP
- Based on this initial analysis, we believe the difference in CalNENA's data and our own is related to the time it takes to provide more accurate locates, as well as the PSAP's own processes and practices



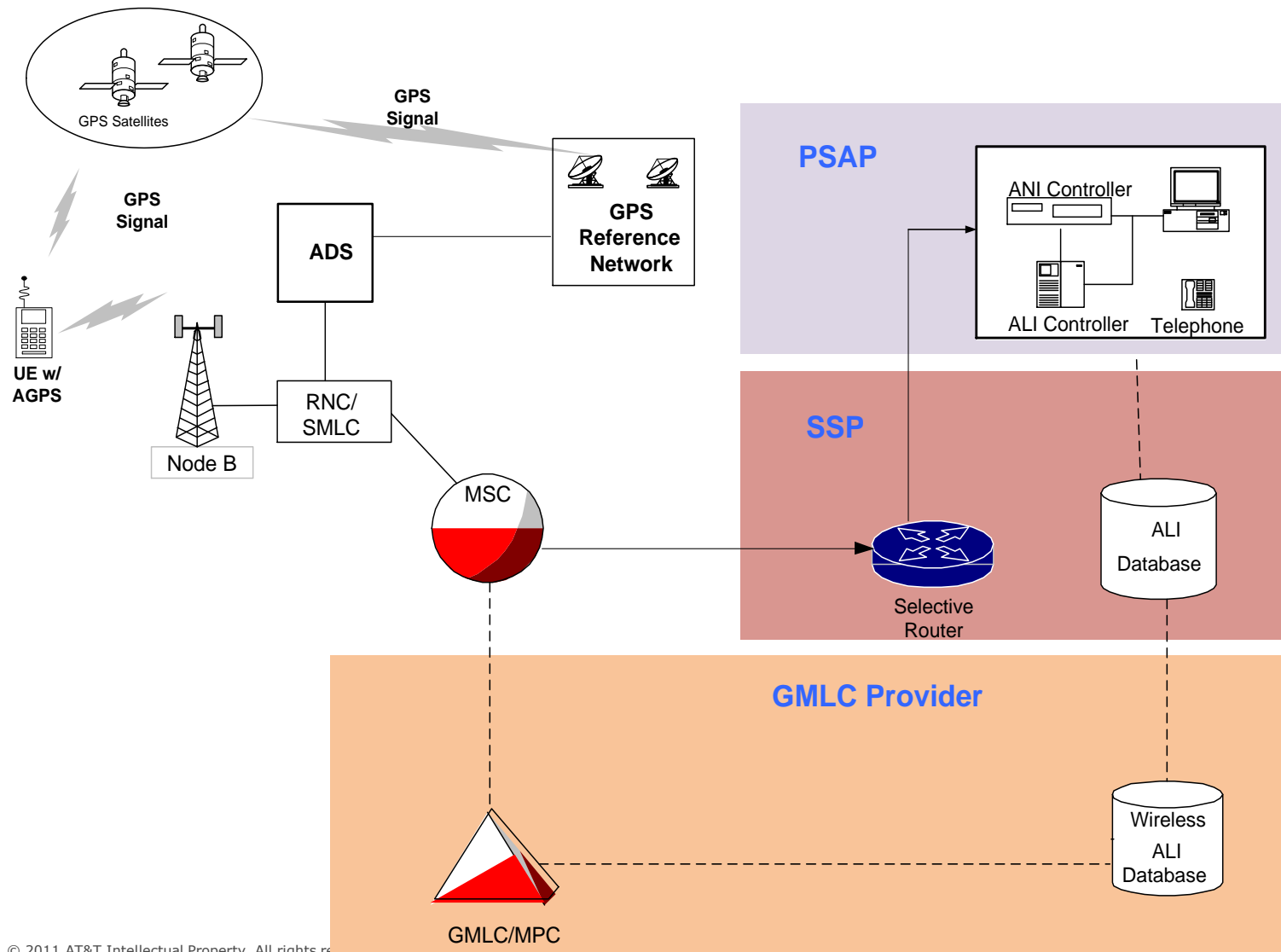
# Obtaining Location at the PSAP

- Understanding the E911 architecture and call flows is important to help understand how location is delivered to the PSAP
- Multiple variables can affect whether location data is displayed in the PSAP
  - The technology used to locate wireless callers (UTDOA vs. AGPS)
  - The length of time required to locate wireless callers
  - The length of the 9-1-1 call
  - Whether the caller provides location information to the PSAP
  - Length of timers within the network (from the PSAP equipment to the wireless carrier network)
  - The type of “bid” request from the PSAP equipment
  - Whether PSAPs are requesting a “rebid” to get information

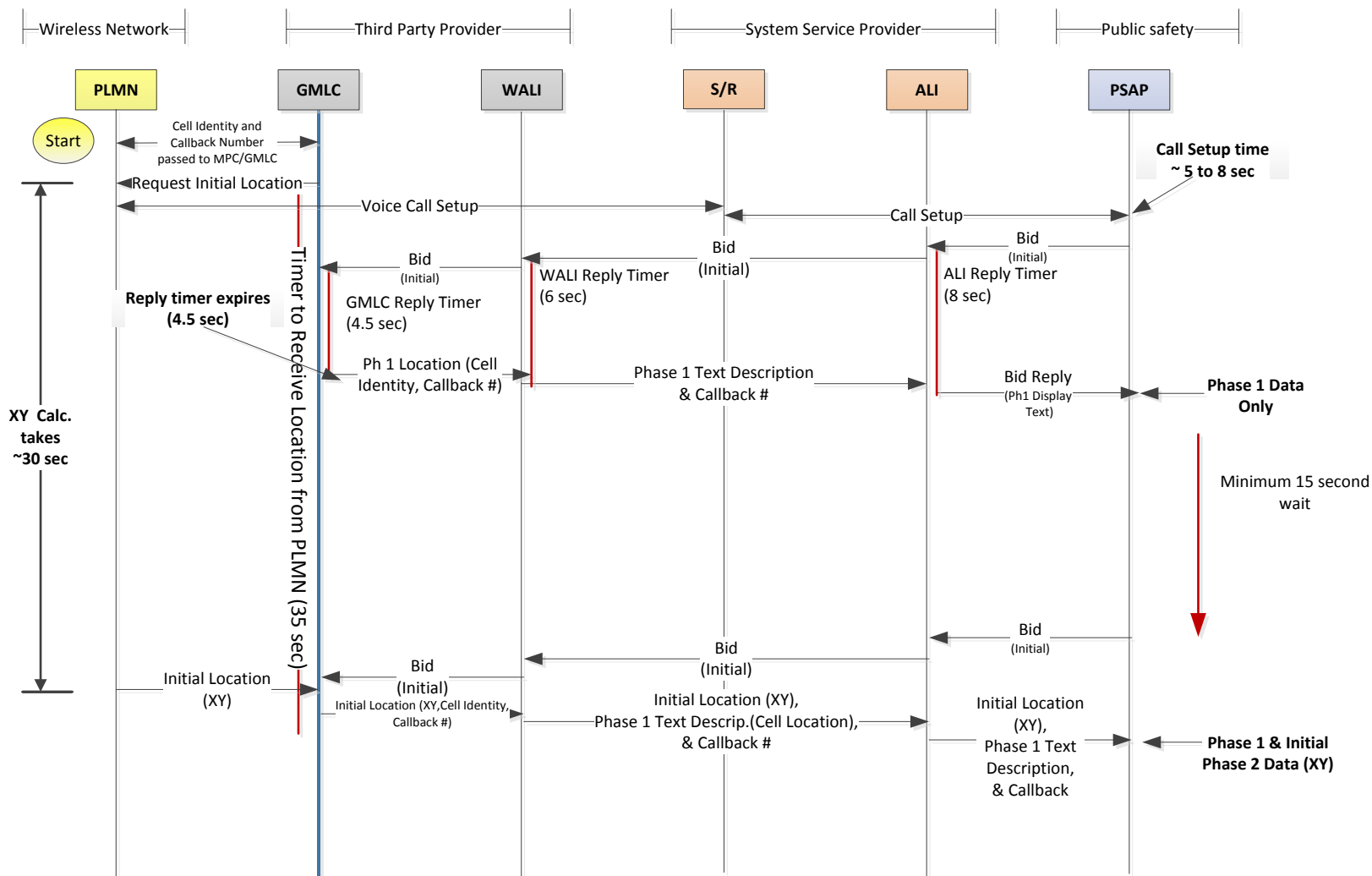




# Representative E911 Architecture



# Representative E911 Call Flow w/Timers



# Phase 2 Delivery per Bid Comparison

		ALI Data Delivery		Phase 2	Likelihood
		Phase 1	Phase 2	Delivery	to Bid
5 CalNENA PSAPs	<b>initial</b>	19677	3382	<b>14.7%</b>	<b>80%</b>
	<b>2 bids</b>	769	3256	<b>80.9%</b>	<b>14%</b>
	<b>3 bids</b>	48	788	<b>94.3%</b>	<b>3%</b>
	<b>4 bids</b>	4	142	<b>97.3%</b>	<b>1%</b>
	<b>5 bids</b>	1	94	<b>98.9%</b>	<b>0%</b>
	<b>6 bids</b>	0	630	<b>100.0%</b>	<b>2%</b>
All CA PSAPs	<b>initial</b>	244708	73098	<b>23.0%</b>	<b>78%</b>
	<b>2 bids</b>	7010	65019	<b>90.3%</b>	<b>18%</b>
	<b>3 bids</b>	429	15150	<b>97.2%</b>	<b>4%</b>
	<b>4 bids</b>	66	2845	<b>97.7%</b>	<b>1%</b>
	<b>5 bids</b>	22	888	<b>97.6%</b>	<b>0%</b>
	<b>6 bids</b>	3	434	<b>99.3%</b>	<b>0%</b>

Source: Intrado. Data covers all of December 2012

- California PSAPs are consistent: they rebid at least once around 20% of the time. This matches anecdotal reports from PSAPs nationwide that say precise coordinates are needed in only 10% to 20% of emergencies.
- Phase 2 delivery throughout California at first bid is better on average (23.0%) than with the five PSAPs selected by CalNENA (14.7%).
- The issue isn't Phase 2 availability, but Phase 2 availability at the initial bid.



# Understanding the variables

- The technology used to locate wireless callers
  - Steady migration toward AGPS
  - Improved accuracy
- Increased location accuracy requires additional time within the network
  - Better estimates of wireless caller location takes longer upfront – but can save valuable time locating the emergency
  - AGPS + RTT takes upwards of 30 seconds
- Timers within the network can affect the display of Phase II data
  - There is a high likelihood that this is the issue based on the review of call flows
  - Need to have detailed review with CPE and GMLC vendors
- The type of “bid” request from the PSAP equipment
  - Possible to request Initial bid, update or last known location, or pure update
  - If update only is requested, location process would restart causing display failure (further review needed)
- Whether PSAPs are requesting “Rebid” to get location estimate
  - From GMLC perspective, rebids only requested 15-20% of calls
  - The possibility that rebids are being lost within the network , which is unlikely, requires further review



# Next Steps

- NENA engaging 9-1-1 CPE Vendors to see if additional data is available at the PSAP
- Further review needed with CalNENA to understand why data (clearly available from our network) is not displayed
  - Need to examine timers
  - Need to examine percent of time rebids requested from PSAP Perspective with hard data
  - Need to examine whether rebids get lost



# Backup for additional discussion



**Attachment B:**  
**AT&T Response to CalNENA Letter**



September 6, 2013

The Honorable Mignon Clyburn, Chairwoman  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20455

RE: CalNENA Letter dated August 12, 2013

Dear Chairwoman Clyburn:

This letter is in response to a letter from CalNENA, dated August 12, 2013, in which CalNENA provided you with internal data from 2008-2012 purportedly showing a significant decrease during that time period in the percentage of wireless 9-1-1 calls that deliver Phase II location information to California Public Safety Answering Points (PSAPs). CalNENA makes the claim that half of the wireless 9-1-1 calls in several geographic areas in California are being delivered to the PSAPs without location information that is needed to find callers. This assertion is overly simplistic and highly misleading.

First, we want to assure you that despite CalNENA's claim, the safety of the public is NOT being compromised and further, that AT&T Mobility (AT&T) is fully meeting its regulatory and public safety obligations to provide accurate and timely Phase II location information. We would also like to explain, based on the current information we have at this stage of our investigation into CalNENA's concerns —why CalNENA, on the one hand, and AT&T, on the other, have different perspectives on this matter.

Although the CalNENA letter references "9-1-1 Wireless Location Accuracy" in its subject line, the text of the letter and CalNENA's supporting data only allege a drop off in the percentage of wireless 9-1-1 locates available to PSAPs in certain specified cities and counties in the state. Nothing in the CalNENA letter supports any contention that the wireless location information provided by AT&T, or any of the other carriers mentioned in the letter, fails to meet the Commission's location accuracy standards set out in Commission Rule 20.18.<sup>1</sup>

While we cannot validate CalNENA's data, it does effectively track with an ongoing migration by AT&T to technology designed to provide greater location accuracy for wireless 911 calls. During roughly the first two years of the CalNENA data, AT&T's location estimates were primarily derived using a network-based location technology called Uplink

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<sup>1</sup> Obviously, if Phase II location information is not being provided, it cannot be deemed "accurate," since a determination of accuracy in this context requires that a comparison be performed between two items (*i.e.*, a data point and a benchmark). But, as explained below, AT&T is in fact providing the Phase II location information and complying with the Commission's rules and directives in this regard.





Time Difference of Arrival. While this technology provided location estimates rapidly—usually concurrent with 911 call delivery—it produced location estimates that were broadly criticized by public safety as being less accurate than estimates produced by Assisted Global Positioning Systems (AGPS) technology. In part because of these criticisms, but also because of the greater accuracy of AGPS, AT&T began deploying AGPS in its 3G and 4G networks. The effects of this deployment coincide with CalNENA’s data showing a drop off in receipt of Phase II locates.

It should be noted that Phase II location information is not *pushed* by wireless carriers all the way to the PSAP. As designed, the standards require AT&T and other wireless carriers to *deliver* the Phase II location information to their Global Mobile Location Center (GMLC) and requires the PSAP to pull it by querying their Automatic Location Information (ALI) database—a request that is often referred to as a “*bid*”. While CalNENA’s data suggests that Phase II location information is not being *delivered* to PSAPs, the data does not demonstrate that Phase II location information is not made *available* to the PSAPs.

AT&T collects data regarding how often a location estimate is calculated for all live 911 calls, known internally as “Location Success Rate” (LSR). For the five California cities and counties referred to in the CalNENA report, our LSR data indicates that AT&T successfully calculated Phase II locations more than 99% of the time. In our network, however, using AGPS technology to obtain a higher degree of location accuracy has meant an increase in the amount of time to calculate the Phase II location information. This increase in the amount of time to calculate a more accurate Phase II locate is, we believe, critical to understanding why CalNENA and AT&T view their respective data differently.

The difference between CalNENA’s data (Phase II information is *delivered* only 31% of the time) and AT&T’s data (AT&T’s network successfully *calculated* and *delivered* Phase II location for the counties in question over 99% of the time) can most easily be explained as a difference of vantage points. From CalNENA’s vantage point, it is collecting data on location information *successfully retrieved by the PSAP* on 911 calls—a data point that can be impacted by various circumstances including whether PSAPs are timely requesting a “rebid” (i.e., a refresh of the ALI database).<sup>2</sup> It may also be true that CalNENA still expects that Phase II location information to be provided concurrently with the delivery of the 911 call. But from AT&T’s vantage point, AT&T’s LSR data reflects compliance with its obligation to calculate and deliver a more accurate Phase II locate, even if this resulting increased accuracy results in a delay that means that Phase II information is not delivered concurrently with the delivery of the 911 call itself.<sup>3</sup> As additional time is involved in

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<sup>2</sup> This is not a criticism of the CalNENA data. For CalNENA to have provided a more nuanced analysis of AT&T’s performance in providing Phase II location information, it would have required, among other things, CalNENA to have access to AT&T’s LSR data.

<sup>3</sup> Moreover, any implication that carriers are obligated to furnish Phase II location *concurrent* with 911 call delivery has no foundation in the FCC’s rules. See CalNENA letter at 2 (“Of the 87,000 wireless 9-1-1 calls we received over the past 18 months, over one-half did not have Phase II location information delivered with the call *as required by FCC regulations*.”).



calculating the more accurate Phase II locate using AGPS technology, PSAPs often will need to rebid at a later point during the call in order to retrieve the location data.

In association with AT&T's increased use and reliance on AGPS for Phase II location information, the company undertook a campaign to inform the public safety community about the increased time necessary to calculate the more accurate information and the need for PSAPs to rebid (*i.e.*, request the location information again) after sufficient time had passed for calculation and delivery of the locate to the GMLC. Specifically, AT&T's External Affairs – PSAP Relations team developed outreach materials<sup>4</sup> for use with PSAPs to describe the change in process and to set expectations appropriately regarding the additional time necessary to acquire Phase II location information. This campaign included discussions with California PSAPs. Generally speaking, we believe that this outreach effort has been very successful, with near universal understanding of the new process to acquire the more accurate Phase II information.

Given the limits of current APGS technology, producing Phase II location estimates more quickly are not possible at this time. Nevertheless, there may be opportunities to fine tune the legacy 911 network in a manner to provide location information more seamlessly for the PSAP. Specifically, the wireless industry, the public safety community, and the supporting vendors should work together to ensure that there is a common understanding of the role played by timers embedded in the system. A greater understanding of the specific timers may permit PSAPs to develop improved processes that account for the slight delay in calculating Phase II location information which, in the long run, provides more accurate location information. In addition, AT&T is continuing to work with the FCC Communications Security, Reliability and Interoperability Council (CSRIC) looking for longer term opportunities to improve location accuracy indoors, which may also provide the benefit of faster location estimates.

AT&T is committed to providing reliable and dependable E911 connections that allow communication with emergency services and assist emergency services in locating the caller that will support and enhance the safety of our communities. As such, be assured that AT&T intends to continue to fully cooperate with the public safety community on this matter, including CalNENA, as well with the Public Safety and Homeland Security Bureau, in order to assist PSAPs to take advantage of the more accurate Phase II information that we are providing them. As part of that cooperation, we are available to meet with Bureau representatives and others to address any questions about our Phase II location technology and our efforts to provide more accurate locates.

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<sup>4</sup> A copy of those materials is included as an attachment to this letter.



Sincerely,

/s/ Joseph P. Marx

Enclosure

cc:           The Honorable Jessica Rosenworcel, Commissioner  
              The Honorable Ajit Pai, Commissioner  
              Chief David Turetsky, Public Safety & Homeland Security Bureau  
              Chief Ruth Milkman, Wireless Telecommunications Bureau  
              Dr. Brian Fontes, CEO, National Emergency Number Association



## **ATTACHMENT**



## **The Need to Rebid on Phase II Calls**

### **Information for Public Safety From AT&T Mobility**

It is widely understood that geographic coordinates provided in a Phase II “location estimate” may not be available to the PSAP when the call is answered. While there is no formal rule, FCC guidance indicates wireless service providers should attempt to provide a location estimate within around 30 seconds (OET Bulletin 71).

When a “911” call is placed, the location estimation process begins immediately and the call is routed to the PSAP using the site and sector information. Prior to the call being answered, a Phase I call record is prepared so that it may be available immediately once the call is answered.

While the call is being set up and delivered, the location estimate is being developed. If the location estimate is not ready when the PSAP answers the call, which triggers the initial query to the ALI database, the Phase I record is presented. The PSAP can then update the record, by sending a rebid. This allows the updated information, the location estimate, to be presented on the ALI display. The rebid is simply a request to refresh the ALI record. We recommend that the rebid not be attempted until 30 seconds into the call, for the reason explained above.

The location estimate may often be retrieved successfully with an earlier rebid, depending on the computational needs of the location estimation process. In reality, the Phase II data is sometimes available immediately upon call answer depending on the length of time required for call routing versus the time required to develop an accurate location estimate.

While 30 seconds is not always necessary, it will be in some cases. If the rebid occurs too early, before the location estimate is available, you may start the location process all over again, and delay the retrieval of the data. So AT&T recommends 30 seconds, as a rule-of-thumb prior to issuing a rebid.

Another item: While the FCC does not require it, most wireless carriers support Mid Call Location Update. That allows the PSAP to perform another



rebid to get an updated location estimate as wireless callers may be moving. We strongly recommend that these rebids be at least 30 seconds apart. The availability of Mid Call Location Updates is also dependent on the signaling system used by the local E9-1-1 System Service Provider between the ALI database and the PSAP, so even if the wireless carrier provides this feature, a PSAP may not always be able to use it.

The Class of Service field in the ALI record provides a PSAP operator with information on when a rebid is needed. When WPH2 is displayed, the handset's location estimate is being displayed.

*(Notes: Rebid is a generic term for refreshing the ALI display. Some other terms mean the same thing, including Retransmit, RTX, ALI Refresh, and possibly other terms. Check with your equipment supplier for the correct term in use on your equipment and the procedure to initiate it.*

*Some PSAP equipment can be configured to do automatic rebids, without the intervention of the operator. This feature should be used carefully. If a single rebid is programmed at the recommended 30 seconds, this should produce the desired results. If Mid Call Location Updates are needed, which is not very often, they can be performed manually at subsequent 30 second intervals.*

*(For more information, please contact [redacted])*